

Our Ref. No.: 0-42390.P5769

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Gang Bai

Application No.: 09/109,261

Filed: June 30, 1998

For: A MULTI-LAYER GATE DIELECTRIC

Examiner: Warren, Matthew E.

Art Unit: 2815

REPLY BRIEF**RECEIVED**

OCT 05 2007

BOARD OF PATENT APPEALS
AND INTERFERENCES

Mail Stop Appeal Brief - Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In the Appeal Brief filed November 2, 2005, Applicant argued that claims 8-10, 13-17 and 20-21 were not obvious over Nagata in view of Momose and Moon. Specifically, Applicant argued that the combined teachings of the cited references do not describe a transistor device having a gate electrode overlying a gate dielectric formed on a semiconductor substrate comprising a first dielectric material and a second dielectric material being scalable for a set of feature size technologies defined by a gate length in the range of 25-70 nanometers, where the first material thickness and the second material thickness are determined by the following relationship:

$$\frac{t_1}{k_1} + \frac{t_2}{k_2} = \frac{t_{ox}}{k_{ox}} \quad (4)$$

The Patent Office relied on Nagata to show the relationship of Equation (4). However, Applicant illustrated that the relationship shown in Nagata, where silicon dioxide is taught to be one of the dielectric materials, is as follows:

$$\begin{aligned}\frac{T_{eff}}{E_{SiO_2}} &= \frac{T_{SiO_2}}{E_{SiO_2}} + \frac{T_{x1}}{E_{x1}} + \frac{T_{x2}}{E_{x2}} + \dots + \frac{T_d}{E_{xd}} + \dots + \frac{T_{xn}}{E_{xn}} \\ \frac{T_{eff}}{E_{SiO_2}} - \frac{T_{SiO_2}}{E_{SiO_2}} &= \frac{T_{x1}}{E_{x1}} + \frac{T_{x2}}{E_{x2}} + \dots + \frac{T_d}{E_{xd}} + \dots + \frac{T_{xn}}{E_{xn}} \\ \frac{T_{eff} - T_{SiO_2}}{E_{SiO_2}} &= \frac{T_{x1}}{E_{x1}} + \frac{T_{x2}}{E_{x2}} + \dots + \frac{T_d}{E_{xd}} + \dots + \frac{T_{xn}}{E_{xn}}\end{aligned}\tag{5}$$

It is clear, that Equation (4) and Equation (5) are not identical. The Patent Office seeks to make them identical by ignoring silicon dioxide as one of the materials of Nagara. However, Nagara specifically teaches silicon dioxide as the dielectric material. In fact, the Patent Office must use Applicant's disclosure to get to Applicant's equation. See Examiner's Answer, p. 7. Applicant also notes that Morimoto, cited for its reputation of the feature size limitation of the claims, teaches only "gate oxide" (i.e., silicon dioxide) as its gate material. Moon, however, may describe irtrium oxide (Y_2O_3) in connection with the ceramic material (e.g., PZT). Moon does not disclose a particular relationship between the Y_2O_3 and ceramic material relative to a particular thickness for a gate dielectric silicon dioxide.

For the above stated reasons, claims 8-10, 13-17 and 20-21 are not obvious over the cited references. Applicant respectfully requests that the Patent Office withdraw the rejection under 35 U.S.C. §103(a).

CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Patent Office believes that a telephone conference would be useful in moving the application forward to allowance, the Patent Office is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

Dated: 4/10/07

By: William Thomas Babbitt

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Nedy Calderon
Nedy Calderon

4/10/07
Date

TRANSMITTAL FORM

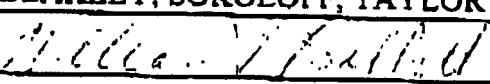
(to be used for all correspondence after initial filing)

		Application No.	09/109,261
		Filing Date	June 30, 1998
		First Named Inventor	Gang Bai
		Art Unit	2815
		Examiner Name	Warren, Matthew E.
Total Number of Pages in This Submission	7	Attorney Docket Number	42390PS769

ENCLOSURES (check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment / Response	<input type="checkbox"/> Petition	<input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Petition to Convert a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	<input type="checkbox"/> Return receipt postcard
<input type="checkbox"/> PTO/SB/08	<input type="checkbox"/> CD, Number of CD(s)	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> Landscape Table on CD	
<input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA	Remarks	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	William Thomas Babbitt, Reg. No. 39,591 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	April 10, 2006

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	Nedy Calderon
Signature	
Date	April 10, 2006

Based on PTO/SB/21 (08-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wir) 11/30/2005.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

FEE TRANSMITTAL for FY 2005

Patent fees are subject to annual revision.

 Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$)

0.00

Complete If Known

Application Number	09/109,261
Filing Date	June 30, 1998
First Named Inventor	Gang Bai
Examiner Name	Warren, Matthew E.
Art Unit	2815
Attorney Docket No.	42390PS769

METHOD OF PAYMENT (check all that apply)

 Check Credit card Money Order None Other (please identify): _____ Deposit Account Deposit Account Number: 02-2666 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

 Charge fee(s) indicated below Charge any additional fee(s) or underpayment of fee(s) under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20. Charge fee(s) indicated below, except for the filing fee Credit any overpayments

FEE CALCULATION

1. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	10	20 ^m = 0 x \$0.00 = \$0.00	
Multiple Dependent	2	5 ^m = 0 x \$200.00 = \$0.00	
Large Entity	Small Entity		

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	380	2203	180	Multiple Dependent claim, if not paid
1204	700	2204	395	"Retain independent claims over original patent
1205	300	2205	150	"Retain claims in excess of 20 and over original patent
SUBTOTAL (1)		(S)	0.00	

"or number previously paid, if greater. For Reissues, see below

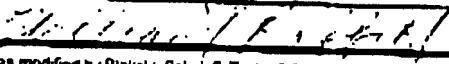
2. ADDITIONAL FEES

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1051	120	2051	60	Surcharge - late filing fee or oath
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet
2053	120	2053	120	Non-English specification
1251	120	2251	60	Extension for reply within first month
1252	450	2252	225	Extension for reply within second month
1253	1,020	2253	510	Extension for reply within third month
1254	1,500	2254	785	Extension for reply within fourth month
1255	2,160	2255	1,080	Extension for reply within fifth month
1401	500	2401	250	Notice of Appeal
1402	500	2402	250	Filing a brief in support of an appeal
1403	1,000	2403	500	Request for oral hearing
1451	1,510	2451	1,510	Petition to institute a public use proceeding
1460	130	2460	130	Petitions to the Commissioner
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)
1808	180	1808	180	Submission of Information Disclosure Stmt
1809	780	1809	365	Filing a submission after final rejection (37 CFR § 1.129(a))
1810	700	2810	365	For each additional invention to be examined (37 CFR § 1.129(b))
Other fee (specify)				
SUBTOTAL (2)		(S)		

Fee Paid

SUBMITTED BY

Name (Print/Type)	William Thomas Babbitt	Registration No. (Attorney/Agent)	39,591	Telephone	Complete (if applicable)
Signature				Date	04/10/06

Application No.: 09/109,281 Filing Date: 6/30/1998

Docket #: 42380.P5769

Date Mailed: 04/10/2000 Due Date(s): 04/10/2000

Client: INTEL CORPORATION

Atty/Sec: WTB/ndc

Title: A MULTI-LAYER GATE DIELECTRIC

First Named Inventor: Gang Bai

The following has been received in the U.S.P.T.O. on the date stamped herein:

Certificate of Mailing

Fee Transmittal (original & copy)

Reply Brief (3 pgs)

Transmittal Letter

Postcard

Assignee: Intel Corporation